

## CLAIMS

What is claimed is:

Sub A' > 1. A cooling assembly for an electromechanical device, the assembly comprising:  
a housing having a wall portion;  
a magnetic field member disposed within said housing and arranged adjacent said wall portion;  
a shaft having windings located within said magnetic field member with an electrical current flowing through said windings coacting with said magnetic field member, wherein at least one of said magnetic field member and said windings produces heat; and  
a helical cooling coil defining a fluid conduit arranged adjacent said magnetic field member for removing said heat.

2. The assembly according to claim 1, wherein set coil is disposed between said wall portion and said magnetic field member.

Sub A' > 3. The assembly according to claim 2, wherein said coil is secured to said windings.

4. The assembly according to claim 2, wherein a thin shell is arranged adjacent to said windings with said coil secured to said shell.

5. The assembly according to claim 4, wherein said coils are brazed to said shell.

6. The assembly according to claim 1, wherein said coils are constructed from stainless steel.

Sub A<sup>2</sup>

7. The assembly according to claim 1, wherein said wall portion is disposed between said coil and said windings with said coils secured to said wall portion.

8. The assembly according to claim 1, wherein said shaft rotates in response to a magnetic field generated by said magnetic field member.

Sub A<sup>3</sup>

9. The assembly according to claim 1, wherein rotation of said shaft produces a current in said magnetic field generator.

10. A method of cooling an electromechanical device comprising the steps of:

- a) producing heat in the electromechanical device having a temperature;
- b) pumping fluid through a helical coil arranged about a portion of the electromechanical device; and
- c) absorbing the heat in the fluid to reduce the temperature.

11. The method according to claim 10, wherein the electromechanical device is an electric motor.

12. The method according to claim 10, wherein the electromechanical device is a generator.

Add A<sup>4</sup>